US PATENT # 8,235,419 B

Installation Manual
G2 Harley Switchback
2012-Present

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Introduction

This manual covers installation of the Generation II LegUp LandinGear system by Chopper Design Services. This system should only be installed by a qualified technician, or those with above average mechanical skills. If you are not SURE that you can perform this installation, please contact us and we will help you find a qualified shop to assist you.

While the Generation II System holds your bike upright very well, you are STILL responsible for balancing the bike! The system **WILL** relieve you of some of the weight of the bike and help you avoid balance problems as you approach a stop, maneuver at slow speeds, and back the bike up.

Improper installation will void your warranty, so please be very careful!

Thanks for choosing LegUp!

Warranty

Chopper Design Services warrants the LegUp system for a period of one year from date of purchase. This warranty covers replacement parts and/or manufacturer defects. Incidental damages or costs are the responsibility of the purchaser.

Defective parts are to be returned to Chopper Design at the address below. Purchaser must contact Chopper Design to receive a Return Material Authorization, prior to returning defective parts to Chopper Design.

Abuse, improper installation or use, collisions or accidents, are not covered under this warranty. Replacement parts for this type of damage are available through Chopper Design.

Users of the LegUp system agree that Chopper Design is **NOT** responsible for personal injuries or damage to property arising from the use of the system. While we believe this system to be safe and reliable, the user is advised that use of LegUp is done so at the users' own risk. Use of the system implies agreement to the above statements. If you can't agree with the above, Chopper Design and its dealers would be happy to refund your full purchase price, before you install the LegUp System.

Chopper Design Services
1365 Bennett Dr #101
Longwood, FL 32750

407-834-5007
LegUp@LandinGear.com

Installation Instructions

The LegUp® system has many components. Pleased be sure you have them all before starting your installation.

COMPONENTS:

1) **Wire Harness W Switch Box**

2) **Leg and Mount Assembly (L/R)**

3) **On-board Computer Module**

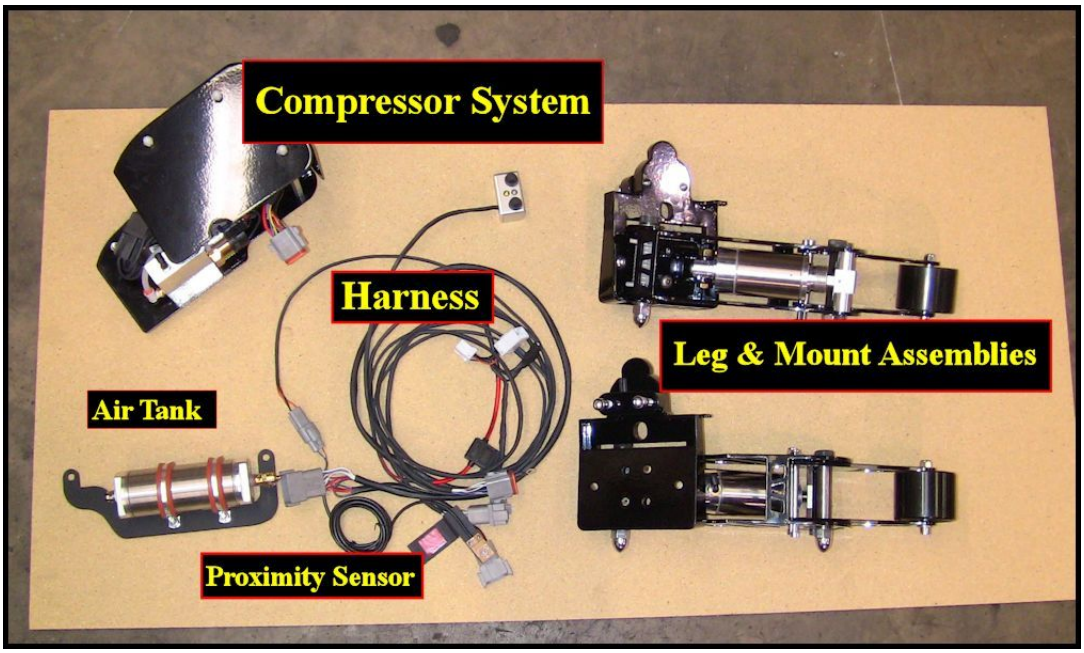
4) **Proximity Sensor**

5) **Saddlebag Mounted Compressor System**

6) **Air Tank**

7) **Hardware Bag**

If you believe you are missing any parts, please contact Chopper Design at 407-834-5007, and we will rectify the situation. Some of the parts are shown below.



PREPARE FOR INSTALLATION

IMPORTANT! ***Harley Switchbacks® MUST have Harley Rear Floorboard Mounts (Part # 49349-07) to install the Generation II System. These mounts (and optional floorboards) are available through your Harley Dealer, or can be purchased through Chopper Design. Factory Saddlebags must remain on the bike to house the compressor system.***

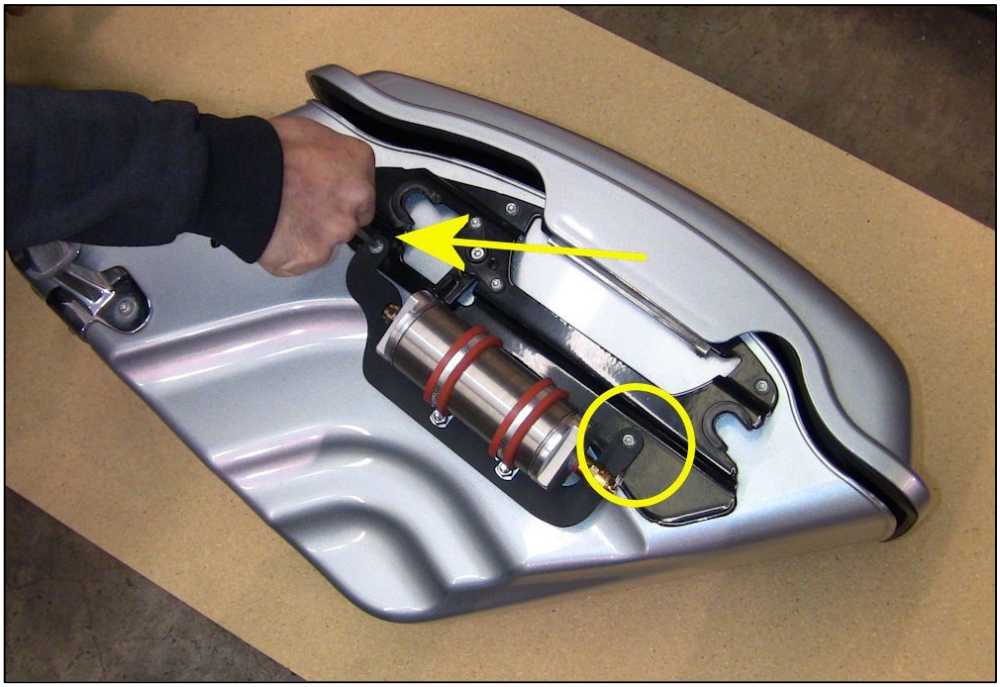
Place the motorcycle on an acceptable bike lift. You will need to keep the bike on its wheels for most of the installation, and jack the rear wheel off the lift for some portion of the installation. Make SURE the motorcycle is secure on the lift!

Remove the seat and disconnect the battery.

This manual is available at http://landingear.com/pdf/g2installdyna.pdf . It may be easier to see some of the pictures in color there!

We are now ready to begin!

MOUNT AIR TANK

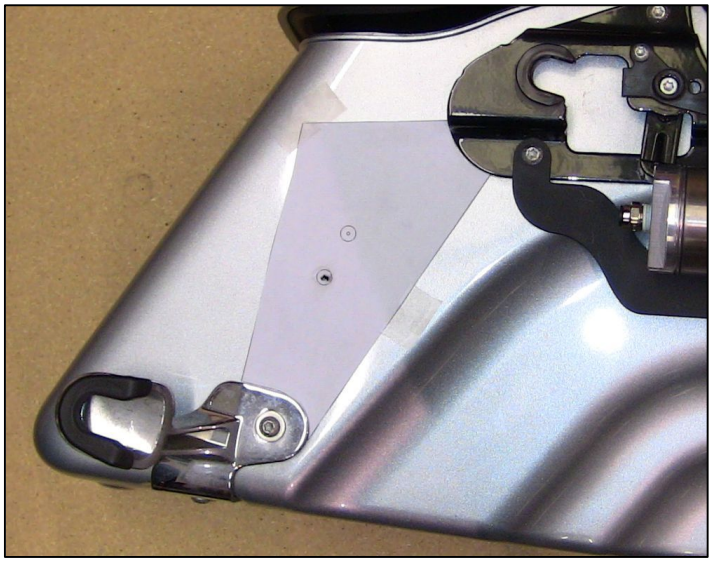


One of the first things we want to do is to mount the air tank and drill the left saddlebag for air lines. The holes we need to drill are small, and can be filled in if the system is ever removed.

We start by mounting the captive air tank and its included bracket to existing bolts on the left saddlebag. Remove this saddlebag and place it as shown here on a soft (non-scratching surface).

The two bolts in this picture (one circled, the other being tightened) get removed, then the bracket and tank are placed over the bolt holes, and the stock bolts are reinstalled (us a bit of blue Loctite here). Once these are installed, we can move on to drilling for air lines.

The second to last page of this manual has a drilling template. You will need to cut this template out carefully and attach it to the saddlebag. This will allow you to drill one of the two holes through an existing hole in the metal support structure, inside the saddlebag.



As you can see in the photo, the template has two curves to match the curves on the upper and lower brackets on the back of the saddlebag. Attach the template carefully with tape, then, using a punch; mark just the lower hole so you can drill it.

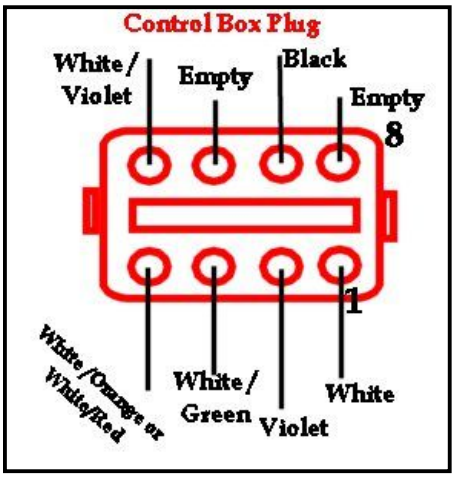
The final hole size for these holes will be 5/16”, but the bottom hole needs to be start drilled with a reasonably small (1/8” or smaller) bit. You will see why in a moment.

Once you have drilled the first hole, look inside the bag. The hole should have wound up coming through the existing hole we talked about earlier. Assuming this is the case, carefully use a 5/16” bit, and drill the hole the rest of the way, allowing the bit to wander its way into the existing hole. It is no big deal if the hole winds up outside the hole in the inner support metal, but with a little care, you can avoid this.

Next you can punch and drill (full size) the upper hole, as this is though plastic only. Make sure both holes are smooth, as we will be running air lines through them and burs are not desirable here.

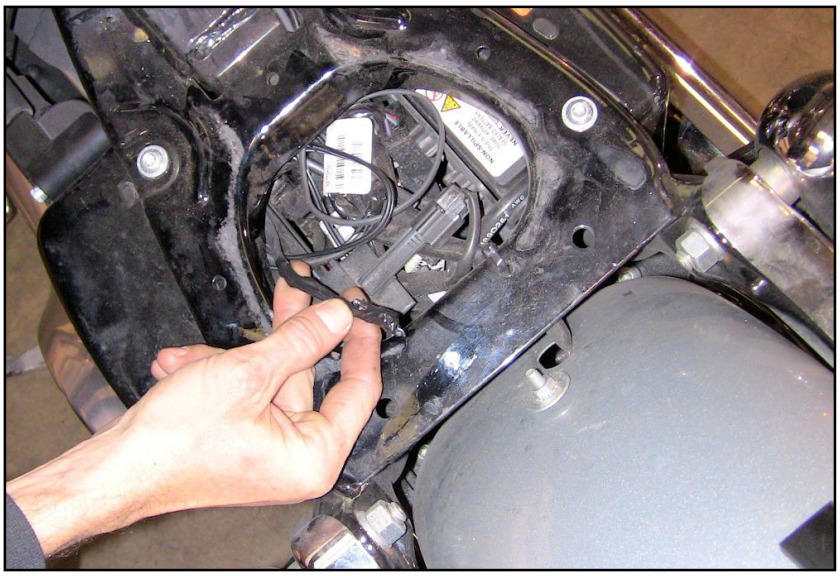
Once complete, set the bag aside, rather than reinstalling it on the bike.

CONTROL SWITCH BOX

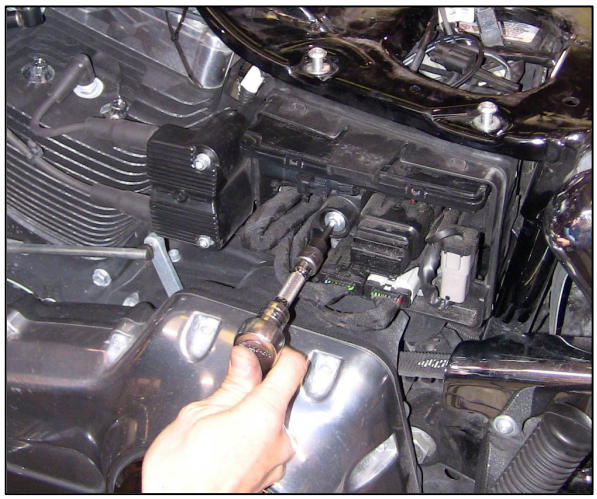


Remove the bolt on the top of the left switch housing on the handlebar. Find the long chrome bolt, thread it through the Control Switch Box, insert the spacer on the bolt and (with a drop of Blue Loctite), thread the bolt into the switch housing. Square the box before tightening the bolt (you may have to re-align the mirror for clearance). Route the wire inside the clutch lever and down the bar. Use wire ties to hold the wire to the bar. Run the wire through the top triple tree if you can to control it. The idea here is to get the wires neatly to the front of the tank and routed under the tank. (It may be easier to remove the plug end and tape the silver plug ends together for this). We have some pictures below to give you an idea of what this looks like.

On some bikes it is easier to loosen or remove some of the tank mounting bolts. Make sure the wires do not interfere with anything under the tank, and that there is nothing that would scuff the wires. Once the wires are under the seat area, you can assemble the plug, if disassembled, according to the diagram above.

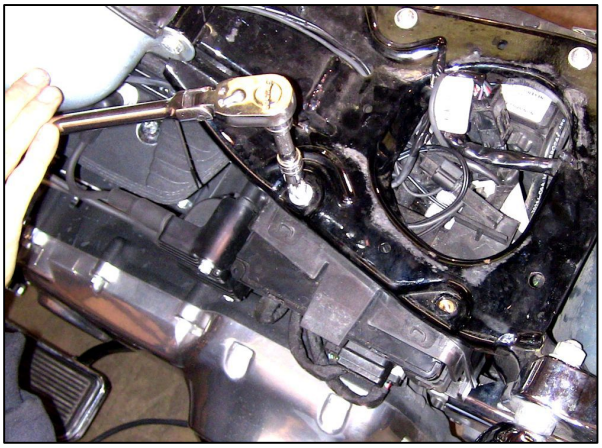


WIRING HARNESS

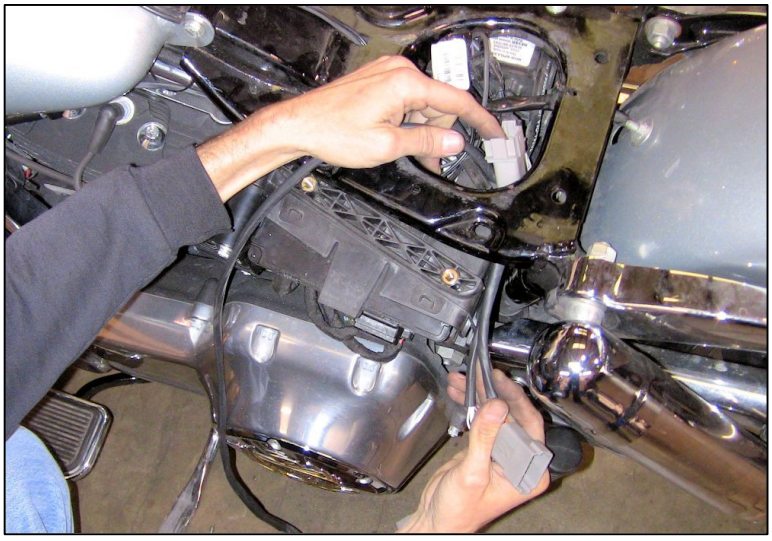


The next step is to route the wiring harness. The harness and the plugs are routed mostly under the seat, and toward the left saddlebag. Different models have different amounts of space in this area, and all the wires are long enough to allow you to place the connectors in the best place for your bike.

On the Dyna, it is difficult to get wires from the left saddlebag area, under the seat. We need to move the left electrical box, away from the bike for a moment to fit the large plugs through (or you can take apart and reassemble the plugs, but this is easier!) Remove the left side cover and find a single Allen bolt in the middle of the electrical box (left). Remove this bolt completely and then remove the two top bolts securing the box, as seen at right.



Once these are removed, we are can wiggle the box loose and move it out just a bit. You will see there is a raised plastic piece that needs to come down far enough to clear the frame and allow us to pull the box out just a few inches, as seen below.

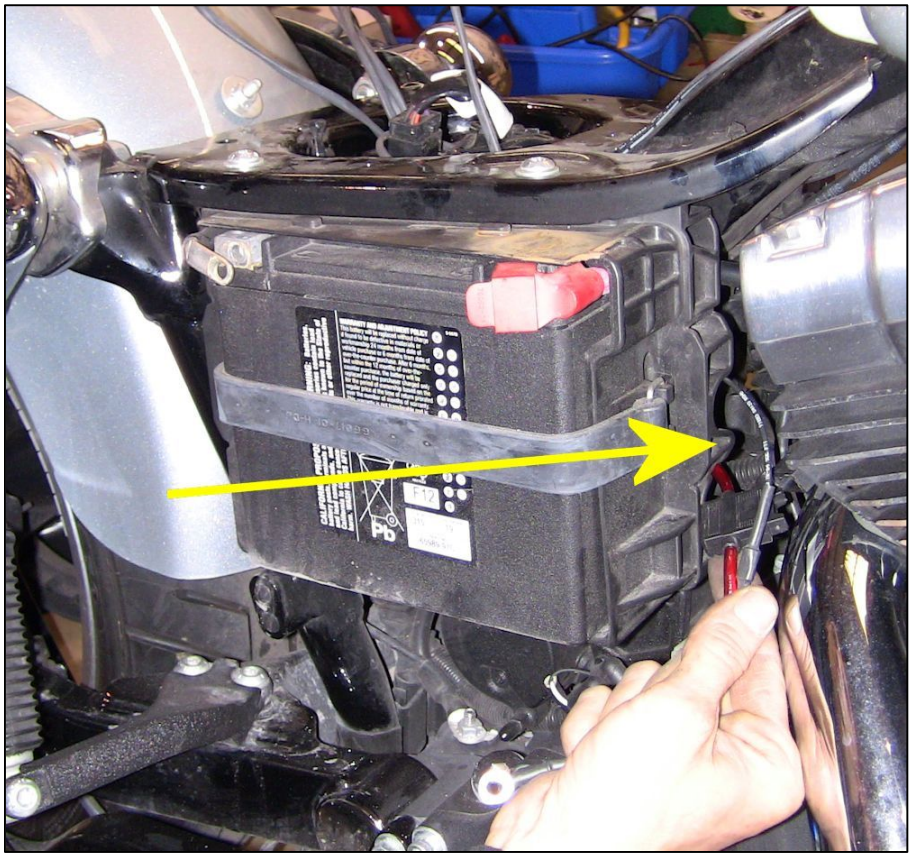


Find the two BIG plugs on the harness (12 pin with an 8 pin pigtail attached), and slide them through the seat area, and out just below the left fender support. Once both plugs are through, you can pull most of the slack out.

Find the proximity sensor and its three pin plug. While the box has made this room for us, we should push the three pin plug up under the seat through the same space you just brought the other plugs down through.

Now you can reinstall the electrical box. With the plugs past the box, the wire can be adjusted to get any extra length back under the seat later, as we finish up!

We need to find the fuse holder and the black wire with the hoop end and get it to the battery. These two wires run direct power to the compressor when it needs it. We can start this wire toward the forward right corner of the under seat area, and run it out in front of the battery.



These two connectors get attached directly to the battery. For now, attach the wire with the fuse holder, to the positive (front) battery terminal, and leave the black wire loose near the negative cable (which should be disconnected already!). We like to put the fuse holder under the rubber strap, which keeps the wires tame.

When you have done this, pull all the extra slack up into the area below the seat.

Let's plug some things together!

Disconnect the black fender plug under the seat, and plug the double white plug in-between the plugs from the bike (don't worry about the small black appendages; they are not used for anything). Connect the Control Switch Box plug to its mating connector under the seat, and plug the proximity sensor plug (3 pin) to its matching connector.

If everything went according to plan, you should have all plug connectors under the seat plugged to their matching plus, the positive battery lead (with fuse holder) should be connected to the positive battery terminal, there should be a hoop connector near the negative battery terminal, and on the left side you should have two big plugs waiting for a home, and the proximity bracket and sensor, with no place to go quite yet!

Next, we need to secure the wires that go into the saddlebag to the left fender rail, and leave enough wire for the plugs to reach the computer and the compressor.

Start by getting the wire with the 2 big plugs on it, run inside the left shock toward the back of the bike. Next, measure 8 inches back from the 12 pin (biggest) plug and mark the wire. We are trying to make sure we have all the wire we need but not too much extra.

Run the wire under the chrome fender support and tie it off to the two fender supports. On some bikes, you can actually get the wire ties between the fender and the strut, and secure them around the bolts, on others with removable hardware you may have to secure it to the fender support itself, or the chrome saddlebag mounting points.

No Matter how you need to secure the wire, make sure you have 8 inches of wire sticking out from the end of the saddlebag rail, and that the wire is tight to the support. You can now pull the extra wire back into the under seat area. Later we will be securing air lines to this wire, so make sure that will be possible with your choice of how to attach this wire!

The only wire left dangling should be the proximity sensor and mount, and we will handle that soon.

LEG & MOUNT ASSEMBLIES

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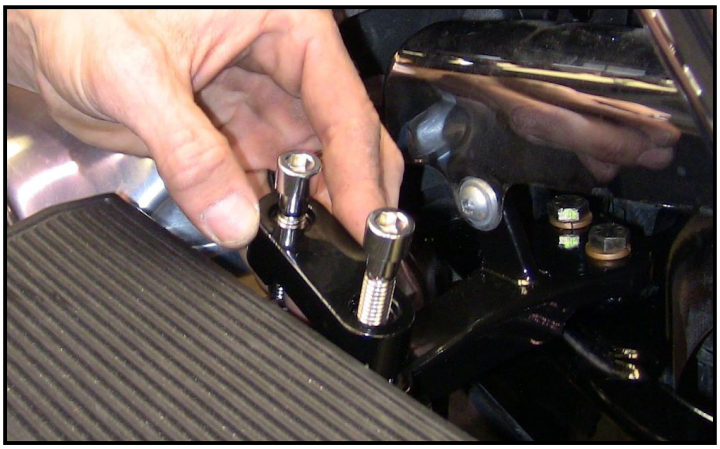
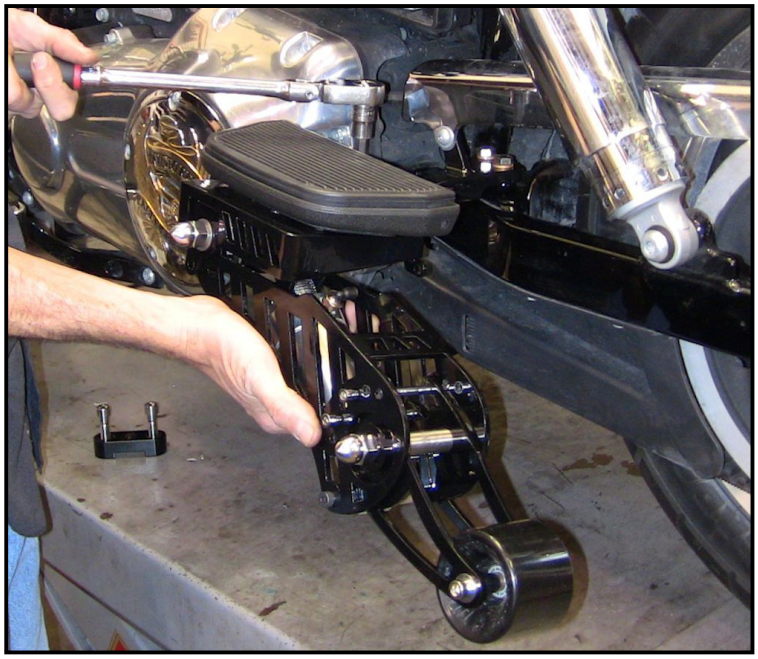
Now we need to mount the Legs under the passenger floorboards. Before we start, we recommend that you change the mount bolts for the floorboard mounts that are required for your installation. Harley supplies Torx bolts, which are easy to strip and hard to tighten.

We like to use hex bolts here so you can check how tight they are on a regular basis, more easily. We have supplied the bolts and lock washers, so remove one bolt at a time on each mount, then using some blue Loctite on each, replace the Torx bolts with the hex bolts and lock washers. These bolts need to be checked often for tightness as the floorboard mounts support our wheels and take a bunch of abuse!



Next we want to mount each of the assemblies, and we start by putting some blue Loctite on the supplied chrome Allen bolts, putting the bolts into the top mount, and laying the mount on the floorboard mount as seen here. Once the top mount is in place, we can mount one of the legs.

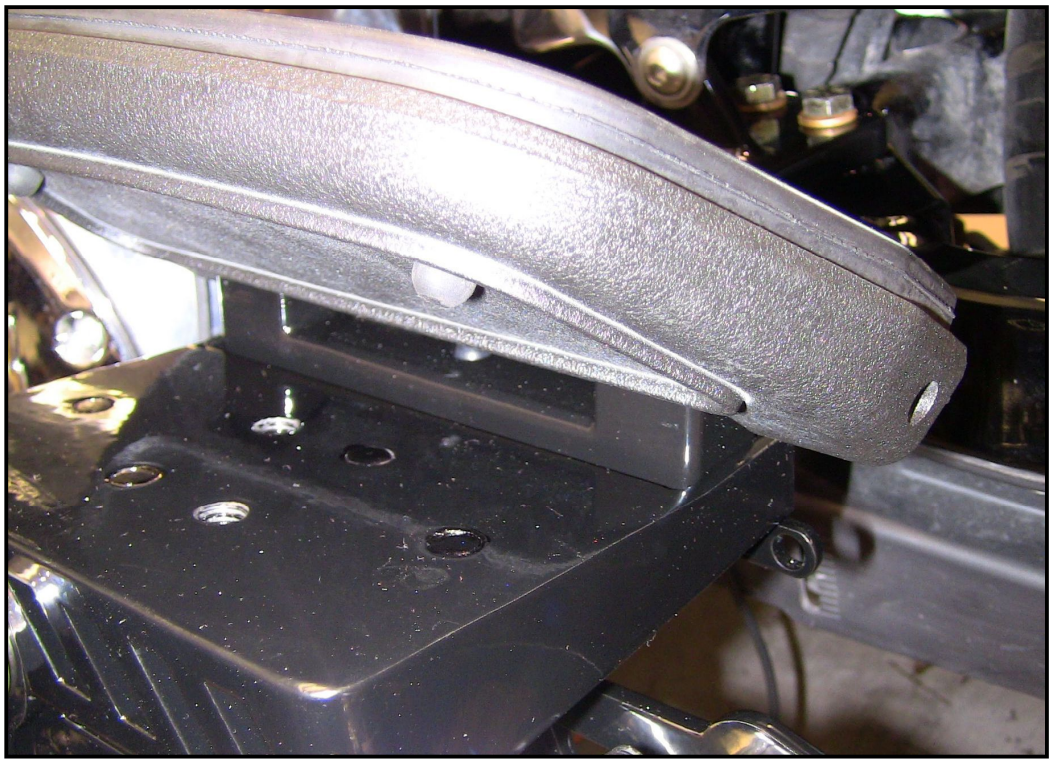


The Leg/Mount system is heavy so you may want to get a helper here. Ben has done this so many times he does it by himself, but you will likely appreciate an extra hand.

The mount has cutouts that fit tightly to the underside of the floorboard mount. Find the mount for the side of the bike you are on, and offer it up to the floorboard mount, feeling the obvious spot it fits into. Start

tightening the Allen bolts a little on each side. Shortly the majority of the weight will be held by the bolts. You need to get this very tight, but must alternate so the mount stays even.

When you are done, you should have the smallest gap on each side of the top mount, and they should be about the same.

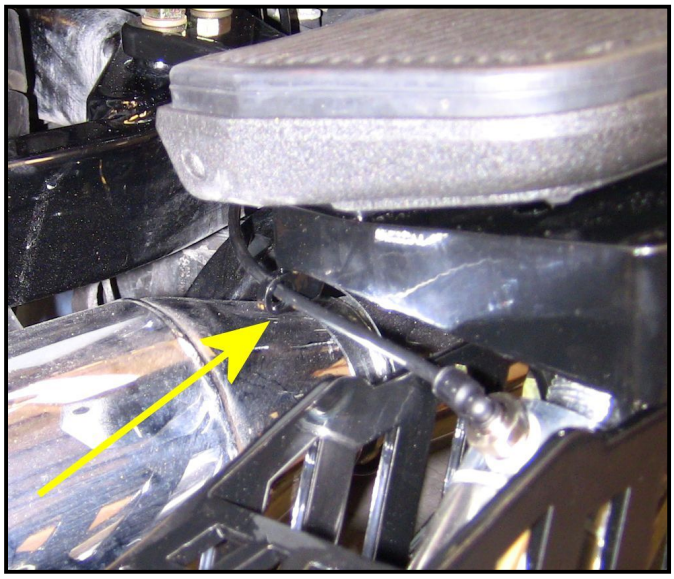


It is imperative that you make sure the mount is in the right place and that it is tight! Here you can see the bottom of the floorboard mount, and how it is even, and snug against the mount.

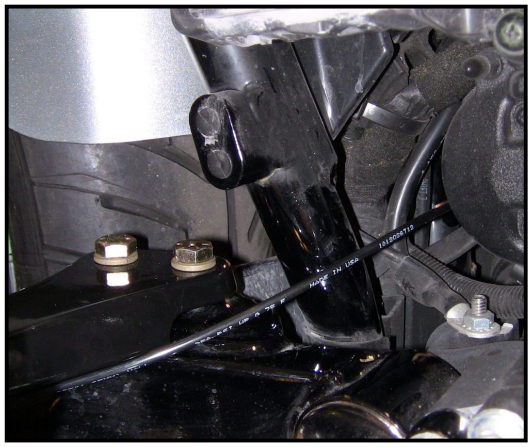
Give it a tug; it should be very stout! If it is, install the other side in the same fashion, and we can move onto running the air lines!

RUNNING AIR LINES

We need to route the air lines from the cylinders to the area near the left saddlebag. You should find 2 long air lines of identical lengths. On the right side of the bike, press one end into the fitting on the back of the air cylinder. These press in relatively easy, but a small tug will make sure the line is seated.

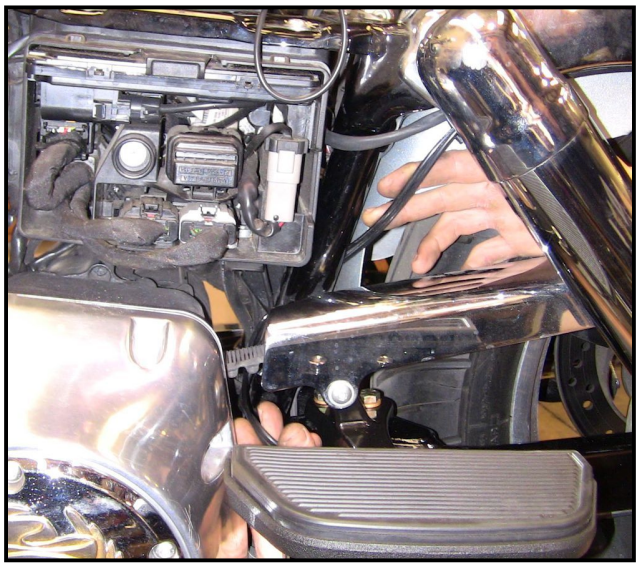


Guide the line through the hole in the mount as shown by the arrow at left.
We now need to guide that line over to the left side of the bike as we will be running it with the other line, away from anything that might damage it!



At right we have a picture of the line running under the left floorboard mount, and in front of the frame down tube, toward the left side of the bike. You should run this line all the way across to the other side and mark the end with masking tape as right.

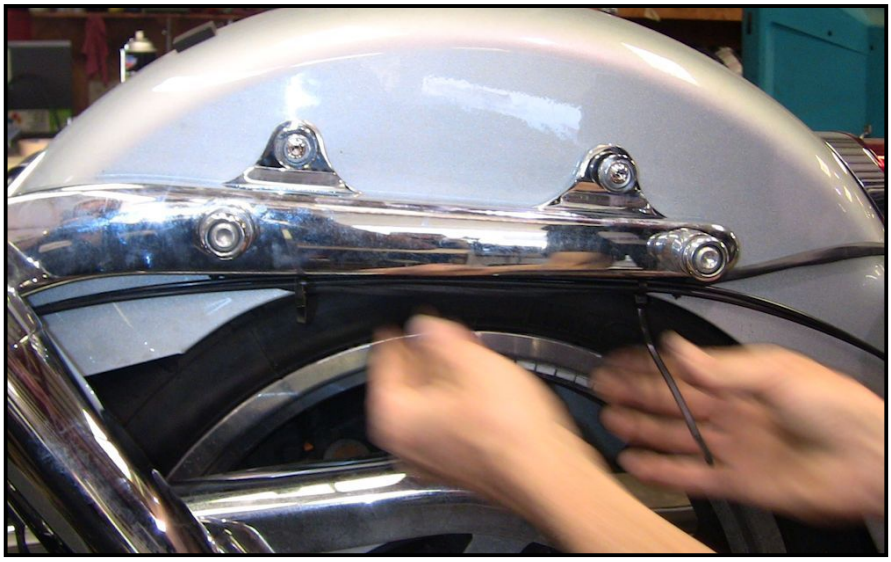
Take the other line; insert it into the right cylinder as you did on the other side. Mark the far end as left and tie the marked ends together with masking tape, so we can run them together.



We want to run the lines under the belt and toward the back side of the frame down tube, as seen at left. We will be tying off the lines soon, but for now we want to guide these up to where the wire running along the fender support is. We like to tie two loose wire ties to that wire, and run the air lines through them. We will adjust and tighten everything a bit later.

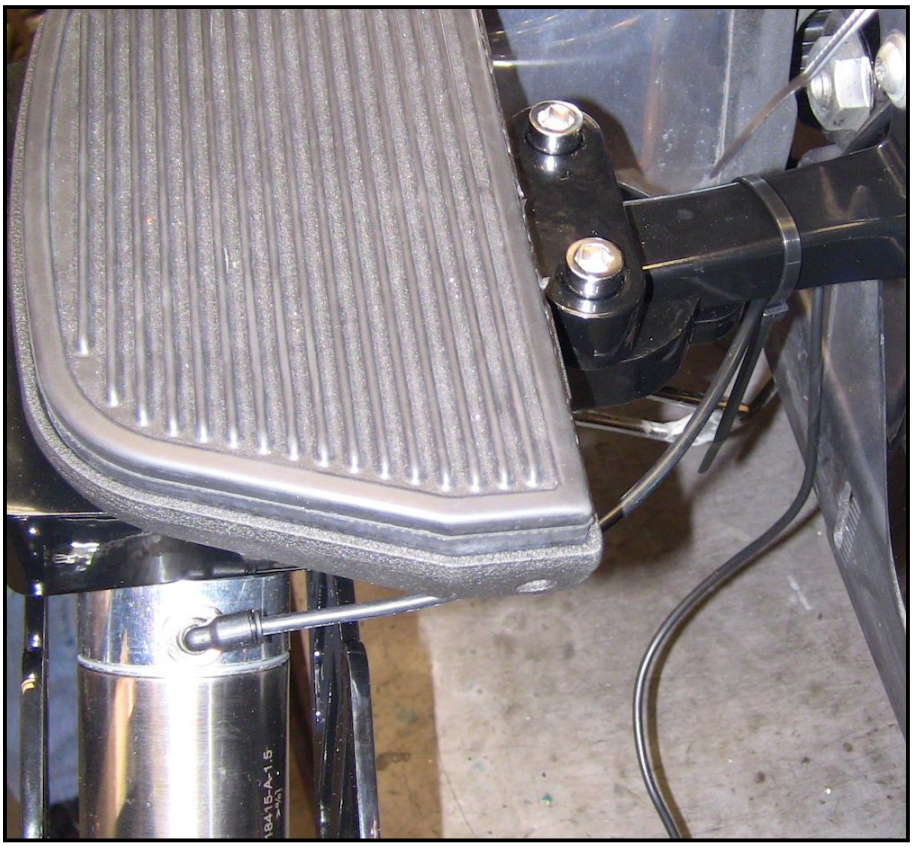
The main concern here is to make sure the lines are run where they will be safe from the belt or pipes or anything that could hurt them.

Here is a picture of the lines running along the bottom of the fender support, being tied off to the big wire running toward the back.



You don't want to make those ties tight at this point, because we have to start from the cylinders and work our way back, tying the lines down as we go.

Let's go to the left cylinder, and start setting the lines up properly. If you look at the picture below, you will notice how some slack was left in the line and it was tied off to the floorboard mount. This is very important. The way we do this is to run the line through the guide in the mount, then through a slightly loose wire tie on the floorboard mount. Then using your hand, you can lower the leg all the way down, which should pull some slack. Then you can tighten the wire tie a bit, and move on to the frame down tube, and tie it to that.



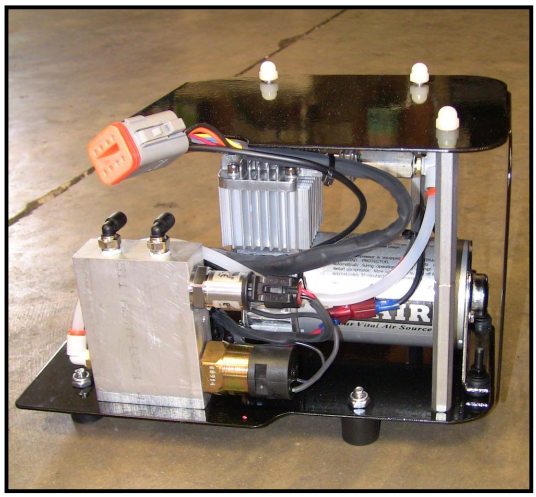
Now test the line again by lowering and raising the wheel. If there is no bind, and there is plenty of slack, great, if not try again! You should do the same with the right side, next.

Just be sure there is plenty of room for the lines to move. Then you can start working back tying off the lines. Tighten the lines under the fender strut, and just leave the end wild for now!

These are air lines, so tie them off snugly, but too tight could restrict the air flow. On to installing the compressor!

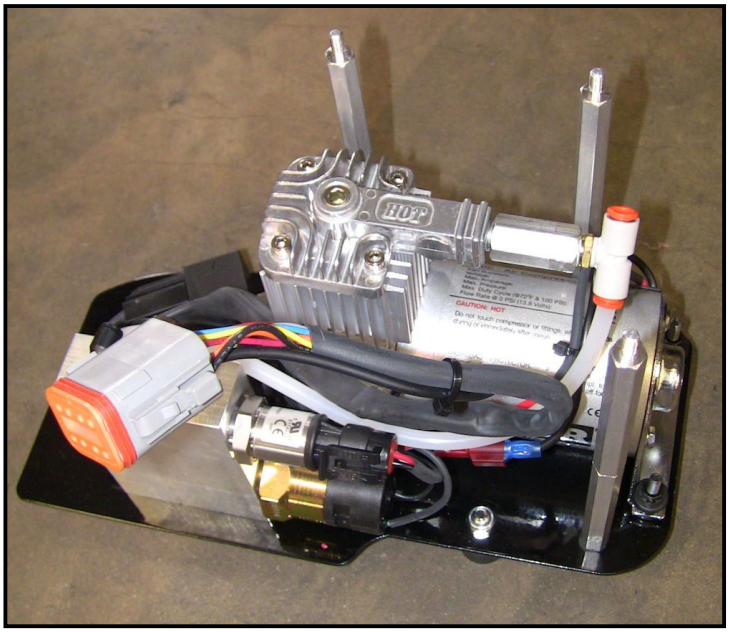
INSTALL THE COMPRESSOR

Now we are going to get the compressor installed in the saddlebag and get the air lines and plugs attached to it. The picture shows the compressor and its top, the way it should have been shipped to you.



First we need to remove the top, as it won't be needed until the very end! We do this by removing the three nylon nuts on the top of the plate. These are only hand tight and will be put back on without any tools as well.

Once the top is off the compressor should look like the picture below. Now we have to prepare the saddlebag and mount it back on the bike.



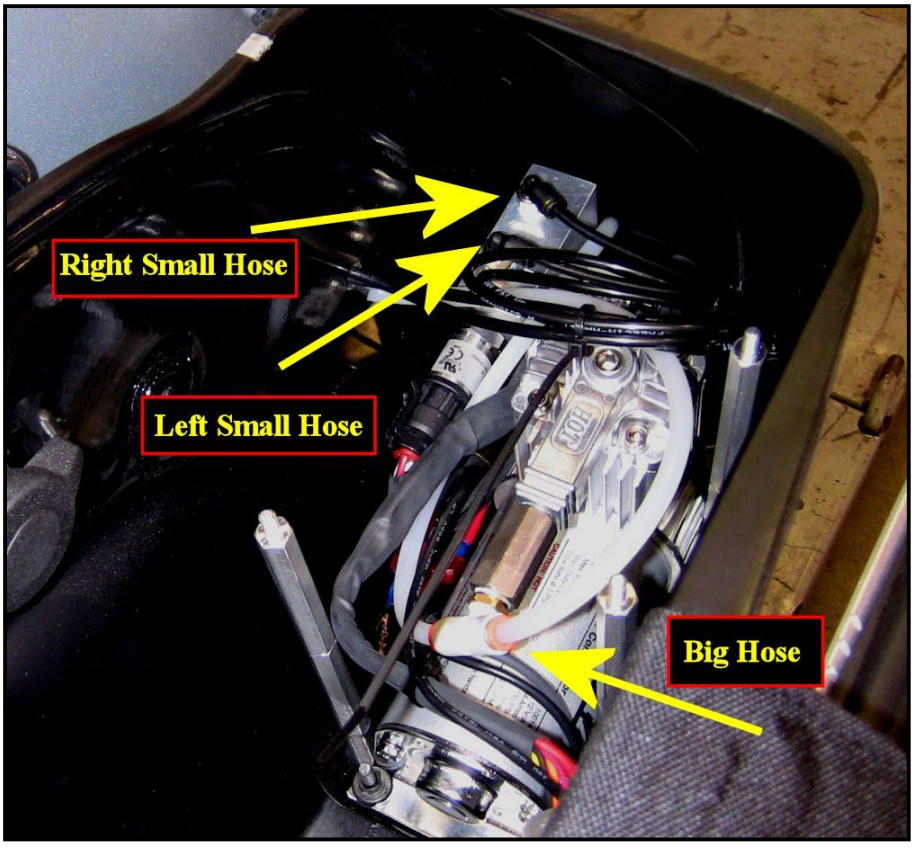
First we need to attach the ¼" fat tubing to the air tank, and push the extra hose into the bag via the bottom hole. We also need to take two small lines and pushed them in to the top hole we drilled into the bag.

Now we can re-install the saddlebag.
Once it is on, pull the extra slack of the hose into the bag. Next we install the compressor.

Take the three lines and put them out of the way as we have here; we tucked them under the cloth that holds the lid. The compressor is a tight fit, so slide it in with the two standoffs toward the front. Usually keeping the back lower than the front is the easiest, and work it all the way to the back of the saddlebag.

The bottom of the compressor mount is contoured to fit the bag, so when it finds the spot that it is happy in, it will stay there on its rubber feet.

We next attach the air lines, as shown in the next picture. The big line gets trimmed (a razor or sharp knife is best for clean cuts), and inserted into the 'T' fitting at the front of the compressor. Your fittings may be different in color. Leave a bit of slack in the line, but make sure it is under the top of the silver standoffs, so the top cover can be re-installed.

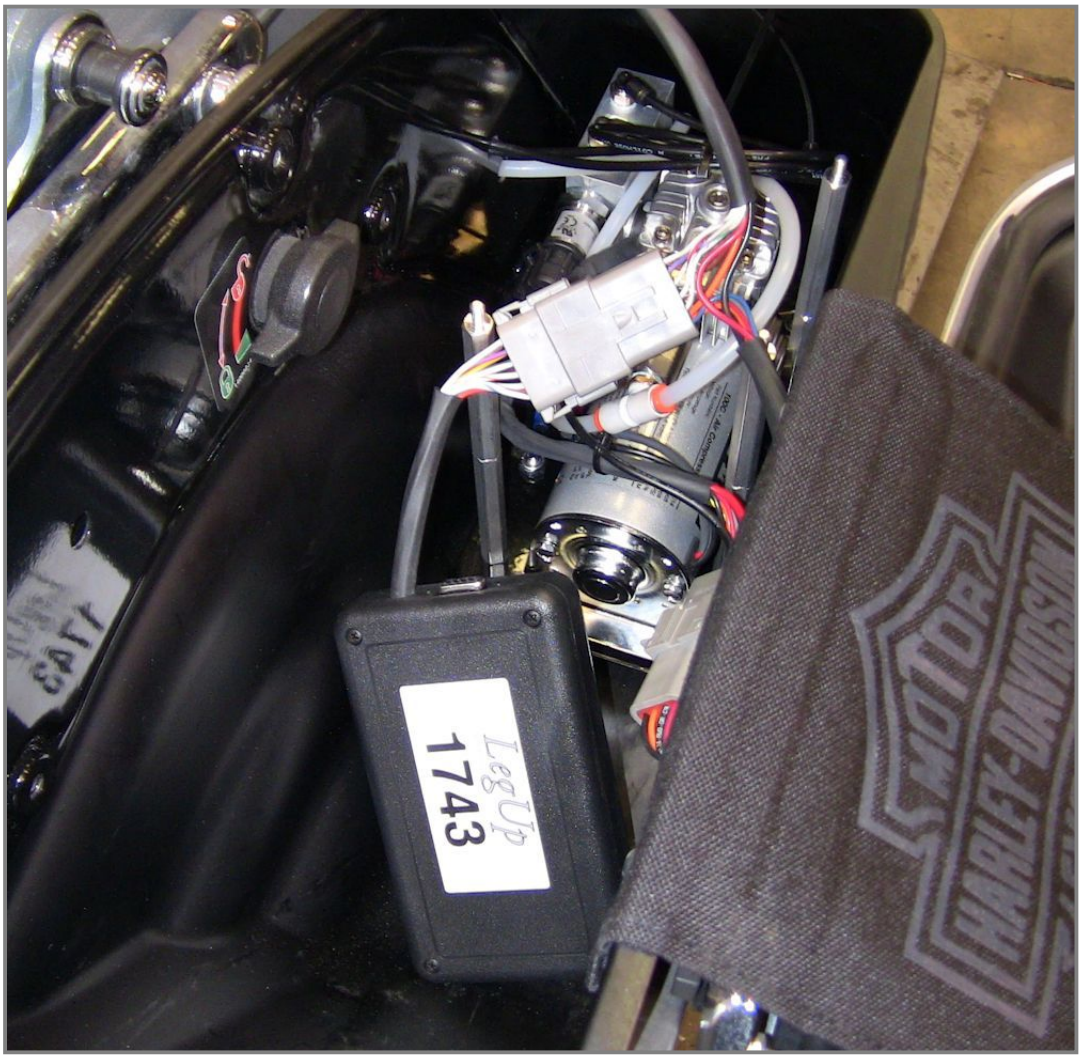


Next we want to hook up the small lines. We like to make a loop and tie it loosely so when we take the bag off, there is some extra slack. Keep track of which line is left and which is right.

We just make a loop and install the left line in the front connector that is all the way in the back of the bag, and the right one in the back connector. Again the connections should get a tug, to make sure they are seated.

When you are done, it should look something like the picture above.

The last task is to temporarily plug the two plugs in, so we can test the system. Find the computer, and plug its 12 pin connector into the 12 pin plug from the wire we hung on the fender support. The other plug or pigtail gets attached to the plug from the compressor assembly.



These plugs can only be attached one way, and we are going to leave the computer and wires just loose in the bag for now. I promise we will make it all pretty before you are done.

In preparation for testing the system, if you haven't already, hook the negative battery terminal and the lead from our power connection, up to the negative battery terminal. On to Initial Testing (don't worry that the proximity sensor is still lying on the lift!).

INITIAL SYSTEM TEST

Turn your bike to Accessory Mode (counter clockwise). Your speedometer will illuminate, and if everything is working properly, the compressor should turn on for about 6 seconds to fill the onboard air tank. At this point, have a look at the yellow proximity sensor. The **RED LED** (ON The Sensor) ***Should Not Be Lit***. Take a metal object (screwdriver, wrench, etc.) and hold it on the flat face of the sensor (it has a circle embossed in it). The LED should light up, and go out when you move the metal away. If not, check all your connections.

Next, press the rightmost pushbutton on the handlebar switchbox, and hold it for at least 3 seconds. One or both LEDs on the switch panel should light up or blink; we really don't care which at this point. If this occurs, you are doing well. If both LEDs are flashing (maintenance mode) you can skip the next step which is to press both buttons until both LEDs flash.

Next press both buttons again for just an instant! If everything is working, the bottom or yellow LED on the switch box should flash, and the top LED should be out. The next step requires some care. If the bike is still on the lift, have a helper hang onto it as you touch the left button for just a split second. The legs should move down, likely until the wheels hit or miss the lift, and they do this **VERY** quickly! Again be careful as they could lean the bike if one wheel touches the lift and the other does not. Press and hold the right button and they should move up.

Again; with the bike on the lift, ***you have to be very careful here!***

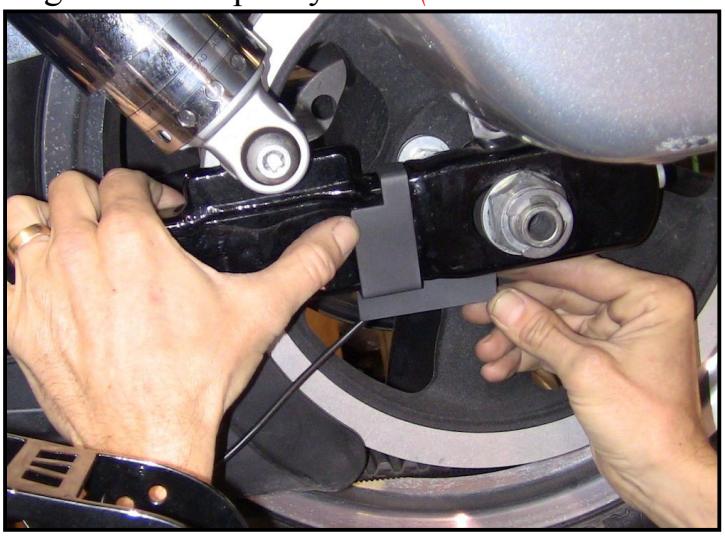
If all of the above has occurred, great! If the legs are not all the way up, press and hold the right button until it stops, and turn the ignition switch off!

The test is now complete. Let's move on to mounting the Proximity Sensor.

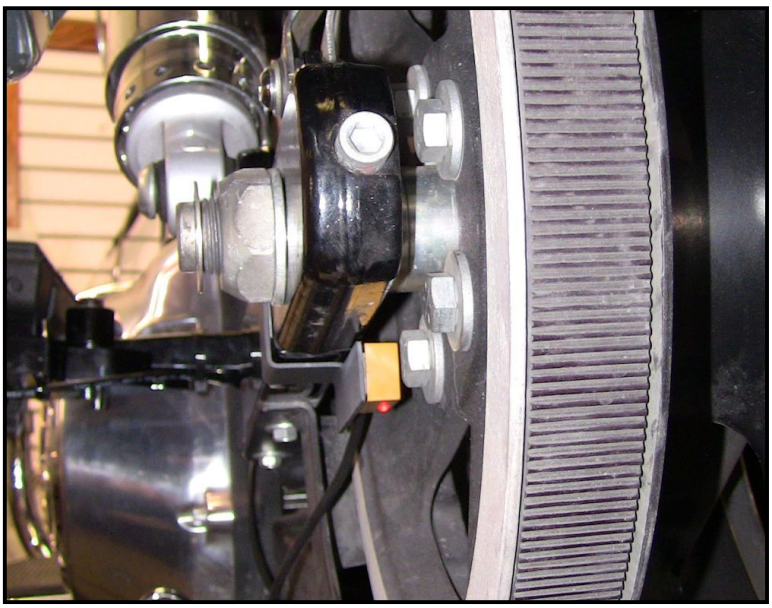
MOUNT PROXIMITY SWITCH

This step is crucial!! Understand it before starting. The proximity sensor tells the system how fast the bike is traveling. The proximity sensor mounts to the swing-arm at the rear pulley a mere 5MM from the pulley bolts. You need to jack up the bike so we can spin the rear wheel and test the sensor and its placement. Make sure the bike is in neutral.

With the bike up as described above, turn the ignition switch to the accessory position. The LED on the sensor should be out. Slide the proximity bracket onto the swing-arm so the sensor aligns near the pulley bolts *(DO NOT ATTACH IT WITH TAPE AT THIS TIME)*. Adjust the bracket so the main part of the sensor is aiming at a pulley bolt and is centered on it (you may have to turn the wheel to do this). What we are looking for is for the LED to go bright and OFF as a pulley bolt passes the sensor. Play with this by rotating the wheel back and forth while holding the bracket in place. Once you feel you have the right place, hold the bracket steady and slowly rotate the wheel. Every time a bolt passes, the light should get bright when the bolt is nearby and off after it passes.

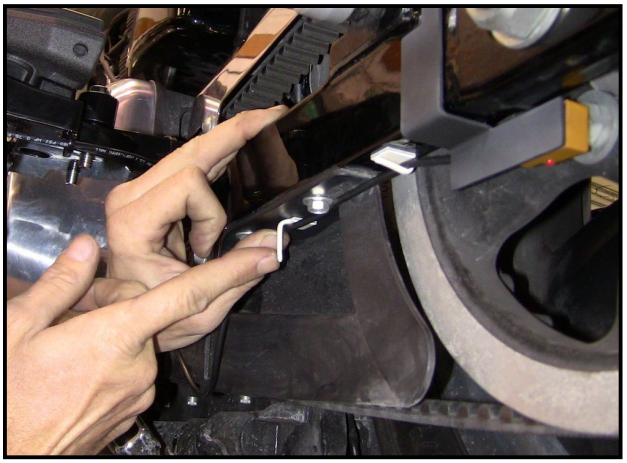


If this is not happening, you may need to get the sensor a bit closer to the bolts (5MM is a very small distance!). If you have to move the sensor closer, you may have to bend the bracket a bit. No matter what you need to do, you MUST make sure that as the wheel turns, the light works as described above! Once you are certain, attach the bracket with the supplied 2-face tape, and test again! The automatic retraction of the legs as well as their deployment **RELIES** on this sensor being placed perfectly!



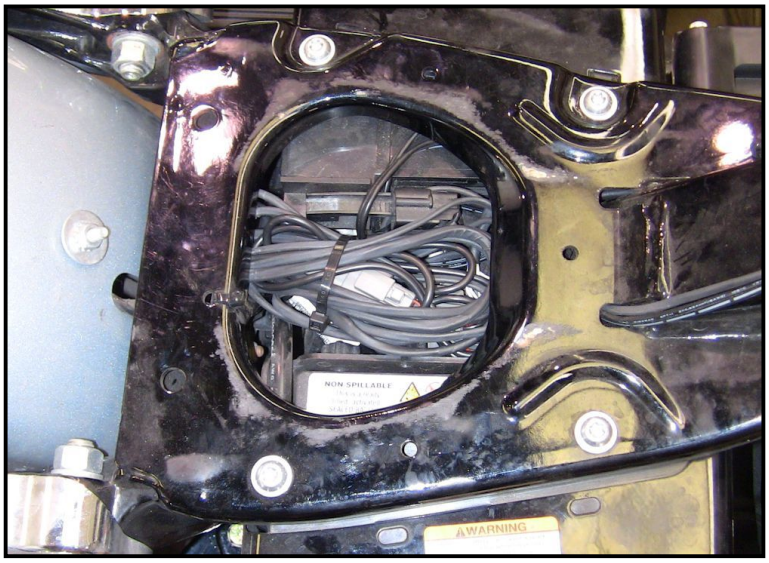
Once satisfied with the mount, skip down to the wire routing instructions below.

WIRE ROUTING

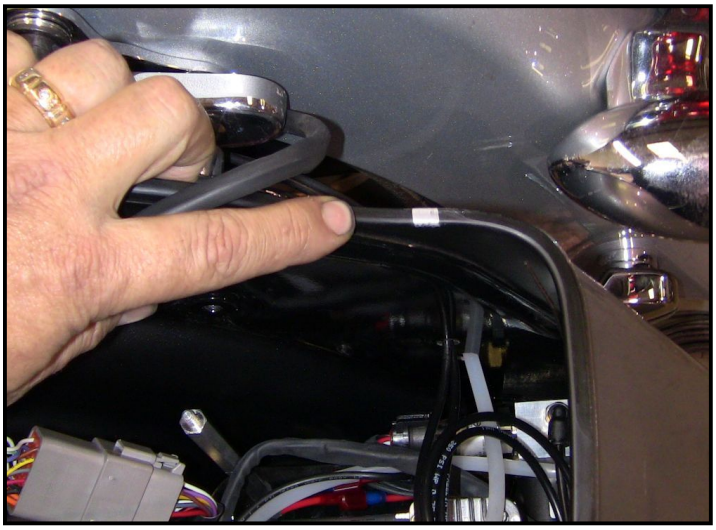


The Proximity sensor wire will run down the swing arm to the same frame down tube that you tied the air lines off to. Use the supplied self-adhesive tabs, to secure the wire snugly to the swing arm. Then leave a bit of slack and tie the wire to the down tube, and do what you need to do to secure the wire safely, and finally pull all the extra wire under the seat area.

Your wire from the handlebar should already be under the seat, tied off to the handlebar neatly from the switch to the triple tree, and secured safely under the tank. Now is a good time to tie up all the wires under the seat. First make sure you have all excess slack pulled under the seat. There is not a ton of room here on the Dyna, so we loop our wires, tie the excess as a bundle, make sure they don't interfere with the seat, and tuck them in as shown here.



We already have the two plugs in the left saddlebag, now we need to cut a small notch in the top of the bag to avoid hurting the wire as the bag is opened and closed. This small notch will NOT compromise the weatherproof nature of the saddlebag.



Make a mark near the back of the bag on the inside lip, as you see here. We use a rotary bur, but you can use a file or even a keyhole saw. Cut a notch that is about 1/4 - 3/8" wide and just about the same deep. Make sure the big wire that connects to the compressor and the computer fits into the notch without rising above the top of the edge of the bag (see below).

You may see the white, self-adhesive clip, just below the notch here. We use that to guide the wire down the side of the bag so it lines up with the cutout in the top! Don't install this until you know where the top will line up (usually directly above the lines coming through the bag)! Now we will install the top and clean things up!

We need to make sure the compressor plug is attached and tucked in as we install the top. Find the L-shaped metal top that you removed from the compressor earlier. The top mounts with the curved cutout toward the fender. It is a tight fit, so slanting it into the bag is best.

As you work the top over the 3 aluminum standoffs, make sure the computer and plug (sometimes it is easier to unplug the computer until the top is set) are coming through the curved cutout, as the plug and computer sit on top of the compressor system. Once the top is fitted, find the 3 nylon nuts and screw them on the three posts to secure the cover. These are plastic nuts so no wrench is required here.

When complete, you want to Velcro the computer onto the top and make sure the plug *(the compressor plug stays UNDER the top)* and wires look something like this. Our main concern here is to give you as much of the saddlebag as possible, and make sure the wires and components are not going to be chaffed or damaged.

FINISHING UP

Now it is time to reinstall everything you took off, and do final checking of everything! Reinstall the seat making sure all your wires are routed neatly, tied off nicely and don't interfere with the seat installation.

Once all of this is accomplished, we should get the bike on the ground, and with a helper, cycle the wheels up and down a few times, having your helper make sure the air lines are not being scuffed or are over tight, and that the wires are out of the way of anything that could damage them.

Double-check all your bolts for tightness. Now we can dial in the legs, and adjust the wheels if needed.

LEAKS!

This system uses air, and air loves to leak! The fittings we use are tested for leaks before shipping, but we have a few simple tests to make sure you have no leaks or just insignificant ones if any.

Set the wheels down and leave the system on. Put the kickstand down, and turn the bars all the way left.

If the compressor makes noise more than once every two minutes, you may have a leak at the lines that connect to the compressor or the tank fittings. Some soapy water will tell you where (you will need to remove the compressor top to test for these leaks).

Assuming the compressor doesn't lose enough air to kick on after 2 minutes, you should be fine.

You can turn the bike off, and wait to see if in 5 minutes the bike is not as stable as it was when the wheels were first lowered. If it lasts the 5 minutes and is still very stable, you could still have a leak, but not one that would be a problem on the road!

Leave the bike on its wheels overnight (again kickstand down, bars full left in case the legs lose a lot of air; the bike will land on its stand). If in the morning, the bike is still stable you have no leaks.

If there are leaks, the fittings on the air cylinders would be the first for the soapy water check, with the two small line fittings on the compressor next! If you need help with these, please feel free to call us at (407) 834-5007.

FINAL ADJUSTMENTS & MAINTENANCE MODE

The next two sections are typically **NOT** needed. We include them to document your system thoroughly, but **MOST** people will never need to use either section.

MAINTENANCE MODE

NOTE: Maintenance mode is a procedure that 'TEACHES' the computer how much pressure to use when it lowers the wheels and how much pressure to release when raising the wheels. We always set this at the factory; ALWAYS!! We include this procedure in case it is ever needed in the future. Please skip this section unless you have been instructed to reset the system by Chopper Design.

Turn the ignition to Accessory and start the LegUp System (hold right button for 3 seconds). The system should be set at the factory for proper pressure, but some wheel adjustment may be needed. If it has been determined that ***'Maintenance Mode'*** is needed, Sit on the bike, and hold it level. If both lights on the switch box are flashing, the system is in maintenance mode. If not, **PRESS & HOLD** both buttons until all lights flash. ***(Do your best to press both buttons at the same time so the system doesn't respond to what it thinks is a request to lower the legs)*** Once flashing, hit both buttons for an instant to get the system in the **'DOWN'** setting mode (lower, yellow LED flashing). Touch the left button briefly; the wheels should go down immediately. ***(This is VERY quick, don't be startled!)*** Using very short pushes of the left button, press and then feel the stability of the bike. If it feels firm enough, try leaning the bike a bit. If the wheels return the bike to upright, there is likely enough pressure. Put your feet on the floorboards; the bike should stand on its' own. Rock the bike a bit left and right, being prepared to put your feet down. If the bike continues to come back to upright, the **DOWN** stop is now set and we can move on.

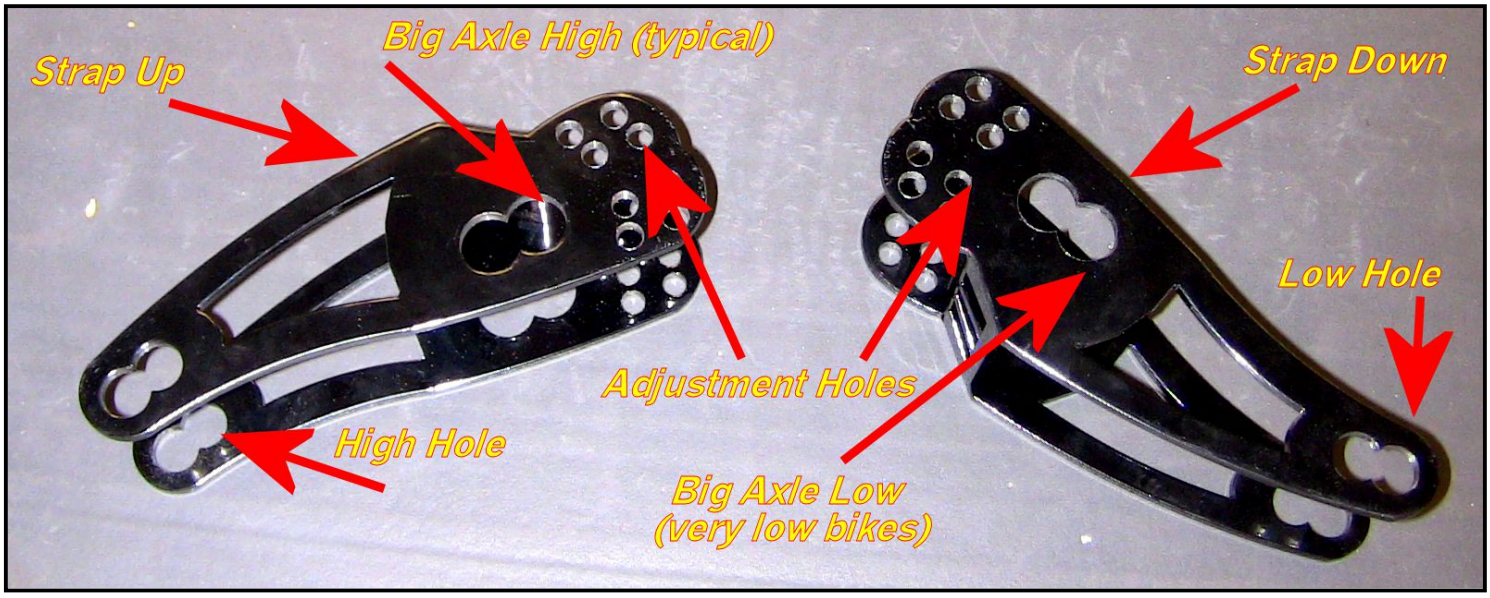
Hit both buttons for a moment to get into the **'UP'** stop mode (Usually hitting the left button just before the right assures that air is not released!) The top LED should now be blinking. Press and hold the right button to raise the legs. Listen as the air evacuates; once it is quiet, let go of the right button. The **UP** stop is now set! Hit both buttons when complete, Both LEDs should light, and you are done with these adjustment.

Now press the left button and the legs should lower; again this is fast and loud. The bike should be held up firmly! Hit it again and the legs should retract. If you are satisfied with these limits, you have successfully installed the LegUp System.

WHEEL ADJUSTMENT

The LegUp GEN II system is typically set up at the factory for the height of your bike. The system is VERY height dependent! If after testing the initial installation, the bike does NOT feel stable, the wheel system MAY need to be adjusted to the height of your bike. AGAIN, we normally ask at order time if your bike is at stock height and we set the system up for whatever height you have furnished us. DO NOT make any changes unless the stability we expect is NOT present! If you feel you need to adjust the height/length of the wheel holders, please read this ENTIRE section before starting the process. If you need help, please contact Chopper Design at 407-834-5007.

If you are happy with how stable the bike feels, you can skip this section, and move on to a test ride! If you are not sure, or you skipped ***'maintenance mode'*** as instructed**,** a good test is to bring the wheels down, put the kickstand down, and lean (or try to) the bike on its kickstand while sitting on the bike. If the bike comes back to center without your help, or you put your feet on the boards and can bring the bike up by just leaning to the right; move on to the next section (Test Ride), the wheel settings are fine.



On each supporting leg, you will find two bolts down near the end by the wheels. The two bolts control the angle of the 'Wheel Holders'. By moving the wheel forward or back, we can tailor the length of the support arms to a particular bike.

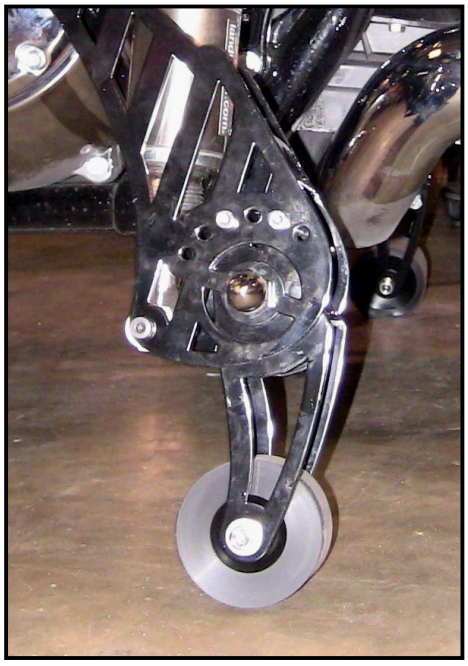
A helper is handy here. Make sure the wheels are up. Make note of exactly which two holes the bolts are in. Loosen the locking nuts from the back and remove the bolts; you will notice the 'Wheel Holder' can pivot on the big axle bolt. Starting on the left side of the bike, move the

bolts one hole counter-clockwise. Go to the right side and move them one hole clockwise. Loosely fit the nuts (no need to final tighten them at this point).

Lower the legs. Is the bike more or less stable? If it is more stable, and you can sit on the bike and rock it back and forth without it leaning over you are done. If not, remove the bolts again, and move them in the opposite direction two holes, and retest. If everything is fine, final tighten the lock nuts and you are done.

If you need to, you can move the wheels from the lowest hole, up one hole. You can remove the wheel holders, turn them over (strap up instead of down for example) and install them on the other side of the bike. You can move the big axle from the low to the high hole. All these techniques take patience, but allow significant flexibility to tailor the system to your bike. On the next page we show you some examples. Normally you do not need to do **ANY** of these adjustments, but if you need to, we wanted to teach you the methods at your disposal.

The picture below left, shows the wheel holders set up for touring bikes with full length shocks (Electra Glides etc.) The one at right is set up for lowered bikes (Street Glide and others). Notice how the curve of the left one is toward the front of the leg, and the curve on the right one is toward the back? This small change can make a big difference in how stable the bike may be. If you are having trouble getting the stability you need, you can remove the 2 small and the one large bolt that connects the wheel holders to the legs, and swap them from one side of the bike to the other. This will reverse the direction of the wheel holders and keep the wheels aligned properly.



Again, this is only needed if you are not getting the stability we describe above.

Below is a picture that shows the angle of the actuator when the wheels are set properly. Notice the bottom of the cylinder (silver, inside the black legs) is further forward than the top! Yours should look like something like this.

If you are still not getting the stability we describe here, please call us, and we will try to determine why not (407-834-5007).

TEST RIDE

Get the bike to a clear paved mostly level area where you can test ride it. Start the bike, turn on the LegUp system and lower the legs. The first test should be done in a straight line. Put the bike in gear and slowly accelerate. You may notice that the bike tends to want to steer a small amount left or right. This is normal unless it is severe. Effectively, you are driving a trike, and steering is done with the handlebars **NOT** by leaning. Once underway, (we recommend you keep your thumb near the left button, and press it to raise the wheels if there are any surprises) the top LED should flash at around 6 MPH, meaning the legs are retracting. It is difficult to lean on one wheel or the other as you leave, so you may wish to raise the wheels manually if the bike is steering due to uneven pavement.

Assuming the legs are retracted, you should try to deploy the wheels. As you come to a stop, the Green LED should be on. As you slow down (**almost stopped**), the Yellow LED should illuminate at the proper speed. Once it does (sometimes hard to see), hit the left button and put your feet down near the ground. The top LED should flash and the wheels should deploy almost instantly underneath you! Make sure you are ready to balance the bike, though you likely won't have to! Immediately after the wheels touch the ground, the bike should be supported reasonably, but the cylinders can take up to 6 seconds to get completely filled. Make sure you balance the bike as this occurs. The slower you are going when deploying the wheels, the smoother the transition will be from wheels up to wheels down. Practice these maneuvers until you are comfortable with the wheel adjustments and the system operation.

SEMI-AUTOMATIC DEPLOYMENT: Another way to deploy the legs is semi-automatically. First we must be **SURE** that the proximity sensor is working properly or the wheels could come down at higher speeds than we wish. If you are travelling at a speed over 10 MPH, AND the yellow light (bottom) on the handlebar control is out, hit the left button. The bottom or yellow LED should start to flash. When you slow down to around 5MPH the wheels will deploy (see the red/green flash on top LED). Again prepare to put your feet down. IF the lower LED is lit at a speed over 10 MPH, don't hit that button; see caution below!

NOTE: The bottom LED Should not be LIT SOLID if the bike is travelling over 10MPH! In the event it is, the wheels will deploy instantly if you try to set them as above; this is dangerous! You MUST re-visit the sections on testing the proximity sensor. You should always be aware that this light should NOT be on if you are traveling at speed, and 'Arming' the system for deployment should only be attempted if the lower LED is Not Lit! Please see the User Manual for more information on Proximity Sensor Failure!

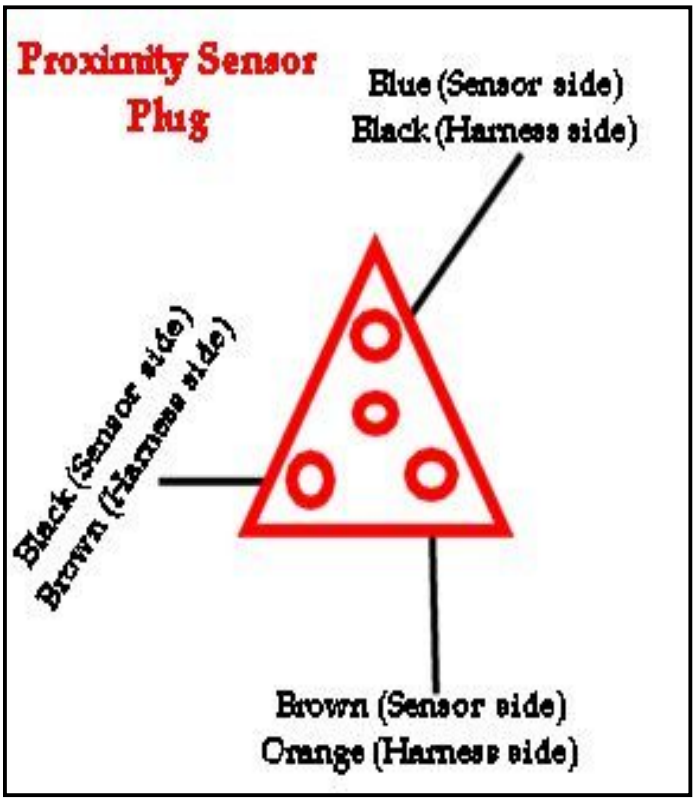
The next thing to try is to make a turn from a dead stop with the wheels down. As soon as you start the bike moving, turns can only be made by using the handlebars. The LegUp system is too strong to allow a great deal of lean with the wheels down! If you need to make a turn shortly after departing from a stop, raise the wheels manually (left button) and you will get complete control again.

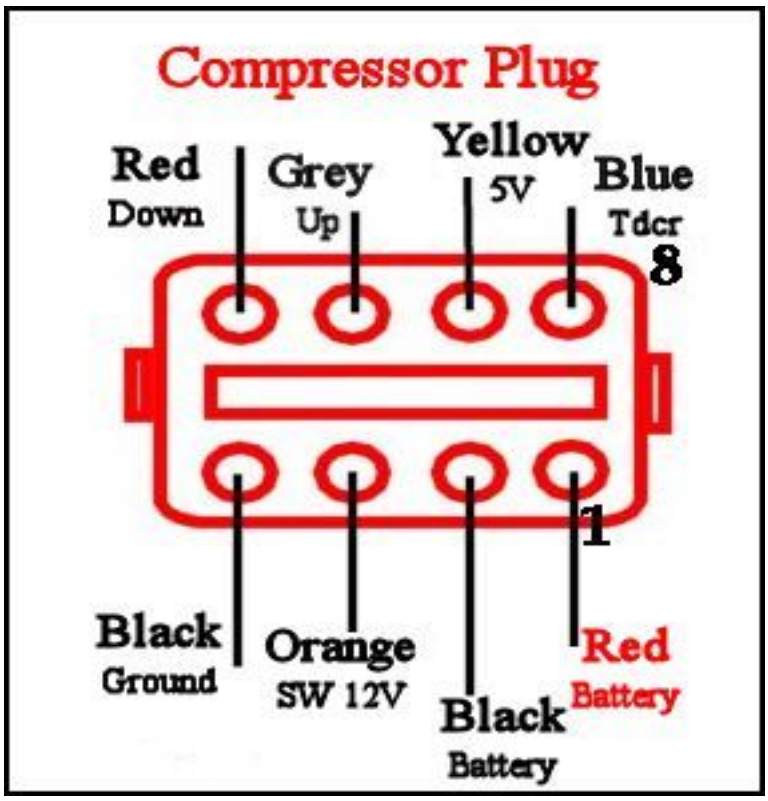
The next thing to try is slow speed maneuvering with the wheels lowered. If you keep your speed down, most slow speed maneuvers can be accomplished with your feet up, keeping in mind that at about 6 MPH the wheels will come up automatically! You can try full lock turns in both directions and the bike should stay upright with your feet up.

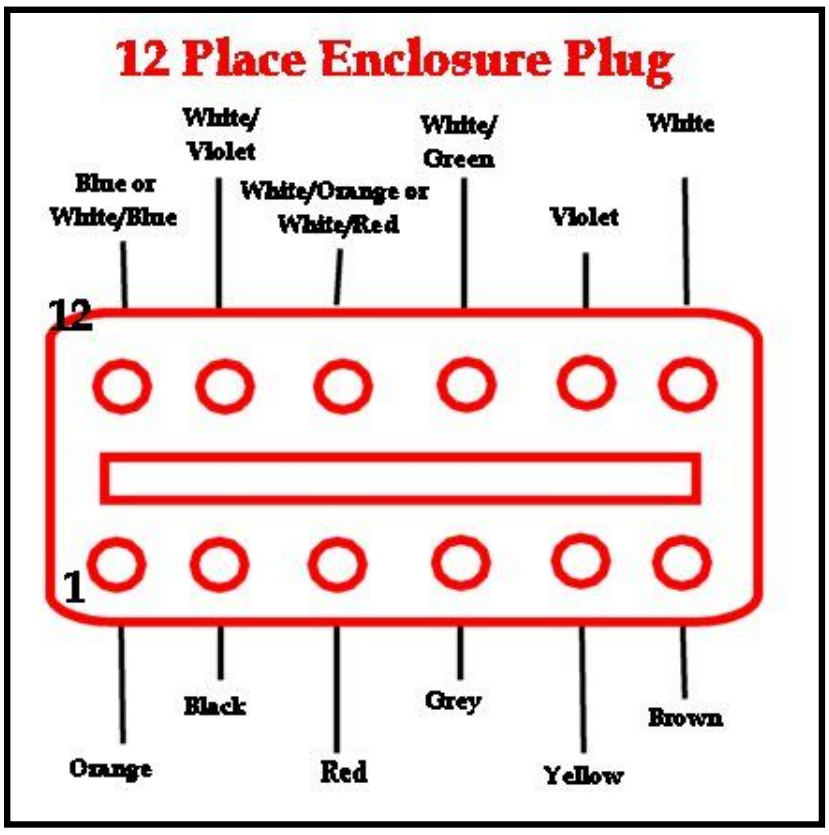
Because the wheels are right behind your legs when they are down, we recommend not trying to push with your feet to move the bike forward. Use the engine and keep your feet out of the way; this way the legs don't bite at your heels as the floorboard always have! Backing up using your feet works fine and the chore of balancing the bike is taken care of for you.

Practice, practice, practice!! Enjoy your LegUp System!

ILLUSTRATIONS



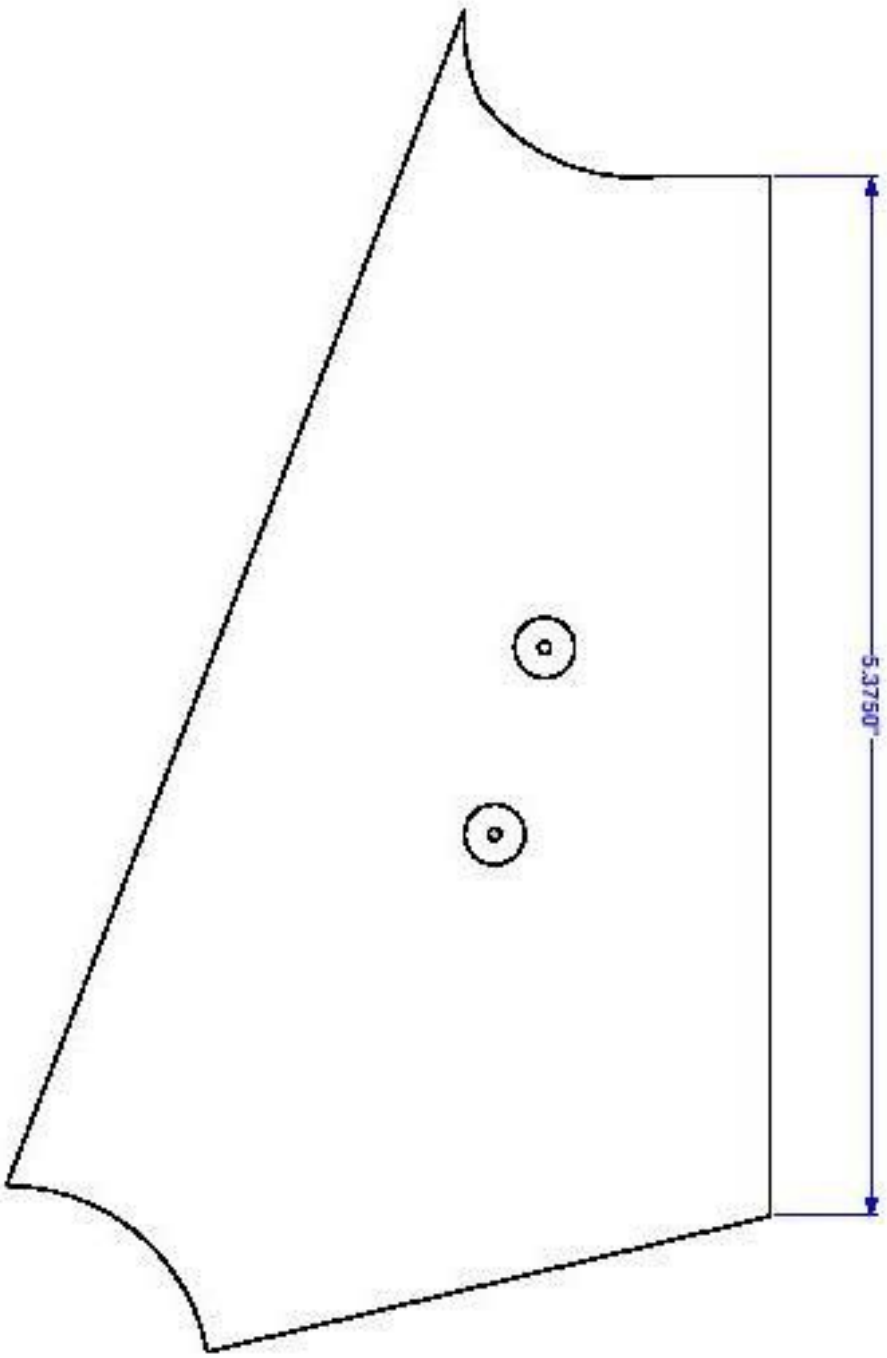




SADDLEBAG DRILLING TEMPLATE

Print and Cut out Make Sure Dimension is Correct!

Some printers don't print to scale!!



HARDWARE LIST

(4) 3/8-16 X 1.25” Cad Hex Bolts w/split washers (Floorboard Mounting Bolts)
(4) 3/8-16 X 1.5” Chrome Allen Bolts (Leg Attachment Bolts)
(2) 5/32” Black Air Line, 7 foot long
(2) 5/32” Black Air Line, 1 foot long (Valve to Unions)
(2) 5/32” Union Connectors
(1) ¼” Air Line, 2 Foot Long

Wire Ties, self-adhesive clips.